

## CLAIMS

We claim:

1. A host cell comprising a genome, said genome comprising a gene encoding a  
5 transdominant negative mutant of the BLV Rex protein.
2. The host cell of Claim 1, wherein said genome is a bovine genome.
3. A nucleic acid encoding a transdominant negative mutant of a BLV Rex protein.  
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4. The nucleic acid of claim 3, wherein said nucleic acid is selected from the group  
consisting of SEQ ID NO: 5 and sequences that hybridize to SEQ ID NO: 7.
5. The nucleic acid of Claim 3, further comprising vector sequences.  
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6. A vector comprising a promoter operably linked to a nucleic acid encoding a  
transdominant negative mutant of a BLV Rex protein.
7. The vector of Claim 6, wherein said nucleic acid encoding a transdominant  
20 negative mutant of a BLV Rex protein is selected from the group consisting of SEQ ID  
NO: 5 and sequences that hybridize to SEQ ID NO: 5 under low stringency conditions.
8. The vector of Claim 6, wherein said vector is a retroviral vector.
- 25 9. The vector of Claim 8, wherein said retroviral vector is a pseudotyped retroviral  
vector.
10. The vector of Claim 8, further comprising a nucleic acid sequence encoding a cell  
surface antigen.  
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11. The vector of Claim 10, wherein said sequence encoding a cell surface antigen is arranged in a polycistronic sequence with said nucleic acid encoding a transdominant negative mutant of a BLV Rex protein.
- 5 12. The vector of Claim 6, wherein said promoter is a BLV U3 promoter.
13. The vector of Claim 11, wherein transcription of said polycistronic sequence is driven by the BLV U3 promoter.
- 10 14. A host cell comprising a genome, said genome comprising a gene encoding a transdominant negative mutant of the BLV Rex protein, wherein said transdominant negative mutation comprises a mutation in the C-terminal from amino acids 110-137.
- 15 15. The host cell of Claim 14, wherein said mutations in said C-terminal domain are from amino acids 115-125.
16. The host cell of Claim 14, wherein said mutations in said C-terminal domain are from amino acids 119-120.
- 20 17. The host cell of Claim 14, wherein said mutations are substitution mutations.
18. The host cell of Claim 14, wherein said transdominant negative mutant of the BLV Rex gene encodes a protein that inhibits BLV replication.
- 25 19. A nucleic acid encoding a transdominant negative mutant of a BLV Rex protein, wherein the protein encoded by said nucleic acid inhibits the replication of BLV and wherein said transdominant negative mutation comprises a mutation in the C-terminal from amino acids 110-137.
- 30 20. The nucleic of Claim 19, wherein said mutations in said C-terminal domain are from amino acids 115-125.

21. The host cell of Claim 19, wherein said mutations in said C-terminal domain are from amino acids 119-120.
- 5 22. The nucleic acid of Claim 19, wherein said nucleic acid is selected from the group consisting of SEQ ID NO: 5 and sequences that hybridize to SEQ ID NO: 7 under low stringency conditions, wherein said nucleic acids encode a protein that inhibits BLV replication.
- 10 23. A transgenic bovine comprising the nucleic acid sequence of Claim 19.
24. A vector comprising a promoter operably linked to a nucleic acid encoding a transdominant negative mutant of a BLV Rex protein, wherein said transdominant negative mutation comprises a mutation in the C-terminal from amino acids 110-137.
- 15 25. The vector of Claim 24, wherein said mutations in said C-terminal domain are from amino acids 115-125.
26. The vector of Claim 24, wherein said mutations in said C-terminal domain are from amino acids 119-120.
- 20 27. The vector of Claim 24, wherein said nucleic acid encoding a transdominant negative mutant of a BLV Rex protein is selected from the group consisting of SEQ ID NO: 5 and sequences that hybridize to SEQ ID NO: 5 under low stringency conditions, wherein said nucleic acids encode a protein that inhibits BLV replication.
- 25 28. The vector of Claim 24, wherein said vector is a retroviral vector.
29. The vector of Claim 28, wherein said retroviral vector is a pseudotyped retroviral vector.
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